

NASA TECH BRIEF



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Porous Glass Makes Effective Substrate for Ozone-Sensing Reagent

The problem: One method of measuring the concentration of atmospheric ozone at high altitudes is based on the chemiluminescence produced in the reaction between ozone and the dye, rhodamine B. Finely divided silica gel deposits which have been used as adsorbents for the dye tend to flake or crumble under severe shock and vibration (such as occur in rocket probes).

The solution: Use a porous-glass substrate for adsorption of the dye. This glass has adequate chemical and physical stability and provides a large interstitial surface area which promotes the reaction between the dye and ozone.

How it's done: A commercially available high-silica glass, obtained in 1/8-inch sheets, is cut into small disks. The disks are soaked for one-half hour in a boiling 10% solution of sodium hydroxide and then thoroughly washed with boiling distilled water. After this treatment, the disks are kept in a vacuum oven at room temperature for 12 hours and then at 100°C for 8 hours. The vacuum oven is then brought to atmospheric pressure with dry nitrogen, and the disks are

transferred to a beaker containing a solution of rhodamine B in anhydrous acetone (50 mg of the dye to 50 ml of acetone). After soaking in this solution for 1 hour, the disks are withdrawn and vacuum-dried at room temperature for 24 hours.

Notes:

1. The sensing disks may find application in ozone monitoring devices.
2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
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Reference: B65-10364

Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated by NASA.

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